

REMARKS

Claims 17-63 are all the claims pending in the application.

As a formal matter, Applicant notes that the Examiner has not indicated consideration of the Information Disclosure Statement filed on March 8, 2004. Applicant requests that the Examiner consider the Information Disclosure Statement filed on March 8, 2004 (and the references submitted therewith), and return an initialed form PTO/SB/09 A&B (substitute) with the next Office correspondence.

Applicant thanks the Examiner for the courtesy extended to Applicant's representative during the telephonic interview of May 19, 2004. The following comments constitute a Summary of Substance of the May 19, 2004 examiner interview, as well as a reply to the final Office Action dated March 22, 2004.

In the final Office Action, the Examiner relies on a newly-cited U.S. Patent No. 6,396,626 to Otani et al. (Otani '626), and rejects:

- claims 17-26, 28-30, 32-42, 44-46 and 48-63 under 35 U.S.C. § 103(a) as being unpatentable over Otani '626 in view of U.S. Patent No. 5,532, 871 to Hashimoto (Hashimoto); and
- claims 27, 31, 43 and 47 under 35 U.S.C. § 103(a) as being unpatentable over Otani '626 in view of Hashimoto and U.S. Patent No. 5,885,712 to Otani (Otani '712).¹

¹ Applicant notes that in the Office Action Summary, claims 52 and 58 are listed as "objected to". However, in the body of the Office Action, the Examiner indicates that these claims stand rejected (see Office Action, pages 2 and 5). Thus, it appears that the Office Action Summary is incorrect. Applicant responds accordingly.

As discussed during the examiner interview of March 19, 2004, Applicant respectfully traverses these rejections as follows.

As explained during the examiner interview, and in Applicant's previous Amendments filed August 1, 2003 and February 6, 2004, an embodiment of Applicant's invention as claimed in independent claim 17 is directed to an optical component that has "at least six stacked layers," and that only two different materials (Al_2O_3 and MgF_2), one having a high refractive index and one having a low diffractive index, are used. The first layer (nearest to the substrate) is specified as high refractive aluminum oxide (thus being "substantially" free of magnesium fluoride). A further limitation regards the second layer, which may not exceed a certain layer thickness limit (optical thickness $\leq 0.33 \lambda$). Further, none of the layers is geometrically thicker than about 0.5λ .

As further explained during the interview, and in Applicant's previous Amendments, an embodiment of Applicant's invention as claimed in independent claim 34 is directed to an optical component that has "multiple stacked layers," the second and third layers meeting specific criteria in optical thickness, while an embodiment of Applicant's invention as claimed in independent claim 50 is directed to an optical component that has "at least six stacked layers" that alternate between Al_2O_3 and MgF_2 and each meet specific criteria in optical thickness.

With regard to Applicant's independent claims 17, 34 and 50, the Examiner acknowledges that Otani '626 (the Examiner's newly-cited primary reference) "lacks reference to the use of magnesium fluoride as the low refractive index material" as claimed in Applicant's independent claims 17 and 50 (see Office Action, page 3, lines 6 and 7), and relies on Hashimoto to supply this acknowledged deficiency of Otani '626. In particular, the Examiner alleges that "Hashimoto teaches that silicon dioxide, which is used in Otani as the low refractive material,

and magnesium fluoride both are commonly known and used low refractive materials and that magnesium fluoride can be used in place of silicon dioxide” (see Office Action, page 3, lines 7-9). The Examiner then concludes that “[i]t would have been obvious to a person of ordinary skill in the art at the time of the invention was made to have the Otani [‘626] filter use magnesium fluoride as taught by Hashimito for the purpose of reducing the optical thickness of the low refractive layer without incurring the cost of making physically thinner layer” (see Office Action, page 3, lines 9-13).

With regard to independent claims 17 and 50, Applicant respectfully submits that, as explained during the examiner interview, the Examiner’s conclusion that “magnesium fluoride can be used in place of silicon dioxide” in Otani ‘626 finds no basis in either the cited prior art, or the general knowledge of artisans skilled in the art of optical coating. That is, the only lens coatings disclosed in Otani ‘626 are those made of oxide films: aluminum oxide (Al_2O_3) film as a high index dielectric material, and silicon oxide (SiO_2) film as low refractive index material. In fact, Otani ‘626 teaches away from using fluoride film by noting that “the use of the fluoride film has created a problem in that low environmental resistance of this film easily degrades performance” (see *Id.*, col. 1, lines 26-31), and by explicitly teaching a multi-layer film having a structure where only the oxide film is used:

In the alternately multi-layered film 20, the high-refractive index layers 22 are desirably formed from an oxide film comprising, as a main component, Al_2O_3 or the like excellent in environmental resistance, while the low-refractive index layers 21 are desirably formed from an oxide film comprising, as a main component, SiO_2 or the like excellent in environmental resistance.

When the alternately multi-layered film 20 is formed with the oxide films alone as described above, a high-performance, two-wavelength antireflection film

having desired antireflection characteristics in two wavelength regions of an ultraviolet region and a visible region and excellent durability can be realized.

(Id., col. 5, lines 18-30; see also Id., col. 7, lines 47-58.)

Thus, one of ordinary skill in the art of optical coating would not have been motivated to modify Otani '626 to replace any of its layers with a layer consisting essentially of magnesium fluoride, as proposed by the Examiner. *See* MPEP §2141.02 (prior art must be considered in its entirety, including disclosures that teach away from the claims) *and* MPEP §2143.01 (proposed modification cannot render the prior art unsatisfactory for its intended purpose or change the principle of operation of a reference); *see also* MPEP §2145(X)(D)(2) (“[i]t is improper to combine references where the references teach away from their combination” *citing In re Grasselli*, 713 F.2d 731, 743, 218 USPQ 769, 779 (Fed. Cir. 1983)).

Furthermore, neither Otani '626 nor Hashimoto discloses, teaches or suggests replacing a silicon dioxide film with magnesium fluoride film for the benefit of reducing the optical thickness of the low refractive layer without incurring the cost of making a physically thinner layer, as alleged by the Examiner (see MPEP 2144.03(E) “[a]ny rejection based on assertion that a fact is well-known or is common knowledge in the art without documentary evidence to support the examiner’s conclusion should be judiciously applied ... , any fact so noticed should be of notorious character and serve only to ‘fill in the gaps’ in an insubstantial manner which might exist in the evidentiary showing made by the examiner to support a particular ground of rejection”). In fact, as explained during the interview, one of ordinary skill in the art of optical components would readily appreciate that reducing optical thickness of any layer in a multilayer system would dramatically change the optical properties of that layer. Thus, it is not at all clear

what cost savings would have motivated one of ordinary skill in the art to modify the teachings of Otani '626 in a diametrically opposing fashion.

With regard to the dependent claim 27 and 31, like Otani '626, Otani '712 teaches away from using films containing fluoride material (see Otani '712, col. 10, lines 45-53).

Therefore Applicant's independent claims 17 and 50, as well as their respective dependent claims 18-33 and 51-57, would not have been obvious from Otani '626 and Hashimoto.

With regard to the independent claim 34, an optical component as recited therein comprises a unique combination of features including, *inter alia*, none of the layers having a geometrical thickness of more than about 0.35λ . While the Examiner alleges that Otani '626 discloses multi-layer film structures where "none of the layers has geometrical thickness of more than about 0.5λ " (see Office Action, pages 2-3), the Examiner does not explain how any of the cited references discloses, teaches or suggests structures where none of the layers have a geometrical thickness of more than about 0.35λ , as recited in Applicant's claim 34. Applicant notes that Otani '626 presents film thicknesses in terms of optical thickness, not geometrical thickness, as claimed. Optical thickness and geometrical thickness are related through the index of refraction of the particular material in question. The Examiner has not demonstrated that Otani '626 teaches or suggests a structure in which none of the layers have a geometrical thickness of more than about 0.35λ , as recited in Applicant's claim 34.

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Thus, Applicant's independent claim 34, as well as its dependent claims 35-49 and 58-63, would not have been obvious from any reasonable combination of Otani '626, Otani '712 and Hashimoto at least for this reason.

Accordingly, reconsideration and allowance of this application are now believed to be in order, and such actions are hereby solicited. If any points remain in issue which the Examiner feels may be best resolved through a personal or telephone interview, the Examiner is kindly requested to contact the undersigned attorney at the telephone number listed below.

The USPTO is directed and authorized to charge all required fees, except for the Issue Fee and the Publication Fee, to Deposit Account No. 19-4880. Please also credit any overpayments to said Deposit Account.

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